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Implementation of ISO and LEAN management into administration

Application in a University Department

BACOU Pascal, MICHEL Cédric
Univ. Savoie, SYMME, F-74000 Annecy
Univ. Cergy Pontoise, 95011 Cergy-Pontoise
pascal.bacoup@univ-savoie.fr
cedric.michel@u-cergy.fr

HABCHI Georges, PRALUS Magali
Univ. Savoie, SYMME, F-74000 Annecy
Georges.Habchi@univ-savoie.fr
Magali.Pralus@univ-savoie.fr

Abstract— This paper deals with quality improvement methods (such as ISO certification and Lean Management) and their implementation into a public administration organization. The main difficulty in applying these methods is to keep a convergence of continuous improvement, and benefits of lean management, with an organization completely structured following the exigencies of administration. A lot of records and procedures are implemented in a public administration according to the stereotypical images of paper-driven, inflexible and inefficient bureaucracy. Actually the main question to be answered is: how is it possible to guarantee full compatibility without confronting difficulties, with the ISO and lean management requirements in public services to reach efficiency? Thus, in this paper, we propose, after a short introduction and an analysis of the problematic generated by administration systems and their complex relationships with ISO and Lean Management, to investigate the application of the “lean process” in an administration with a specific example of a University Department.

Index Terms— ISO, Lean Management, Public Administration, Performance, Bureaucratic Management.

I. INTRODUCTION

Since the 80s, two approaches allowing the improvement of organizations have coexisted in companies: Lean Management and certifications such as ISO ones.

Lean Management taken in its literal sense is the management of the “waste” which allows optimizing the processes of organizations by identifying and removing the unnecessary. ISO Certification is delivered by an independent society guaranteeing the efficiency of the organization mainly in Quality and/or Security, and/or Environment Management. Actually those two approaches allow the improvement of performance into organizations mainly in private organizations.

Applying lean and ISO is difficult in the private sector, but even more in the public one. Over the last few decades, public-sector was surrounded with disdaining criticisms about its hypothetical lack of competitiveness

and productivity so that nowadays public services are involved in a tangible paradigm shift that aims to get them to be more efficient. A major consequence of this paradigm shift is the appearance of the New Public Management adapting the traditional management methods of the private sector in order to reduce the divergence existing into public sector. Thus public organizations are nowadays positioned between two archetypes: bureaucratic and post-bureaucratic management. This potential cohabitation would be one of the determinants of the declared incompetence of public managers [1]. This change is led by the following assumptions:

1. Economics ought to be prioritized
2. Management and organization techniques are useful
3. Lower bureaucracy is a huge necessity.

We notice that those goals are typically the underlying cores of ISO and Lean approaches. That is the reason why public services attempt to adapt those processes that lend themselves to efficiency and quality improvements. Thus we can wonder up to which point the transfer of those private management methods is soluble into the public sector to enhance the quality of services.

Consequently, the main purpose of this article is to study the possibilities of merging Lean Management and ISO certification process and putting them into synergy. After having presented quickly Lean and ISO approaches in the particular context of civil services, we analyze the impacts and results of this fusion on organizations and particularly in public administration organizations.

II. ADMINISTRATION CONTEXT

A large number of MEDC (More Economically Developed Country) has a high civil servants-to-population ratio. For instance, the INSEE (French national institute of statistical and economic information) estimates

that in France, with 5.5M of civil servants, the ratio reaches approximately 22 percent of its working population (INSEE, L'emploi dans la fonction publique – au 31 décembre 2012). Furthermore with a rate of public spending of 57,1% of the GDP (Gross Domestic Product) in 2013, France is one of the countries among the world which government services spend most in proportion to the annual created wealth.

But from now public services have to cope with a period of major reorganization and reorientation owing to new evolutions such as deregulation, competition, privatization, progressive loss of monopoly and marketization [2], [3]. Actually French public sector's (for instance Education, Health Care, Transportation Services, and Telecommunications) productivity doesn't keep pace with that of the private sector.

Specifically in France the lack of competition is due to three main reasons:

- Public sector had a monopoly on many services (Customers usually had no choice of supplier) so that the need for objective measures of organizational and individual performance doesn't constitute an intrinsic worth yet.
- Government is barred by law from firing its workers: therefore the public sector often finds itself in a weak position to apply deep cultural changes to produce new mind-sets.
- There is a relic of high level of bureaucracy which refers to public organizations commonly well-known for their size, their complexity, or even their inflexibility associated with complex rules and procedures.

Bureaucratic management systems have alternatively been named "bureaucratic" [4], [5], "monocratic" [6] or mechanistic [7]. According to Autier [8], the main characteristics of such management systems are:

- Fixed division of labor (both horizontal and vertical role division) with individuals' specializations around tasks.
- Coordination via standards and procedures and fixed operative rules governing the performance of offices.
- Hierarchical authority with vertical orientation of communication (pyramid-shaped structure, where all decisions are transmitted from top management to base level and leads to a low efficacy in top-down communication. This lack of information, especially in terms of corporate strategy, leaves the staff in a state of uncertainty).
- Major tendency to organize abstract systems of roles rather than concrete persons.

These bureaucratic management systems are considered to be inherently unable to generate innovation and even efficiency [5] which implies that bureaucracy is based on a counterproductive excluding principle of organization [9].

II.a. LEAN MANAGEMENT IN ADMINISTRATION

First, it should be noted that unlike ISO certification, lean management is rarely used in the administrative structures. However, it is widely applied in manufacturing companies and its concepts and methods have shown their benefit [10], [11], [12], [13], [14].

To address the issues mentioned in the preceding paragraphs, public-sector leaders are looking with growing interest at Lean techniques used in private industry which can reduce costs dramatically, typically up to 30 percent, because they focus on creating and delivering value for the customer's point of view and eliminating whatever doesn't contribute to this goal.

In the literature, numerous publications deal with Lean Management. A review of the major publications was made by Holweg in 2007 [15].

In complement to this review, Lyonnet proposes an exhaustive study of the concepts of Lean Management [16], [17]. She proposes then in her PhD thesis a matrix which summarizes 27 referring authors. She concludes this analysis by stating that 6 concepts are the base of a Lean way:

- Elimination of waste,
- Just-in-time,
- Continuous Improvement,
- Perfect Quality,
- Visual Management,
- Human resource management.

Lyonnet notices that there is really no exhaustive Lean Method, and that except Liker [13], who develops "Lean Philosophy", the exhaustiveness in the integral concepts is not total. Each of the authors deploys these 6 concepts with more or less complex tools.

We identify two references which deal with this subject: Bertholey [18] who implements lean management concept in a hospital (and particularly in the blood dept.), and Dickson [19] who applies lean method in an emergency department (figure 1).

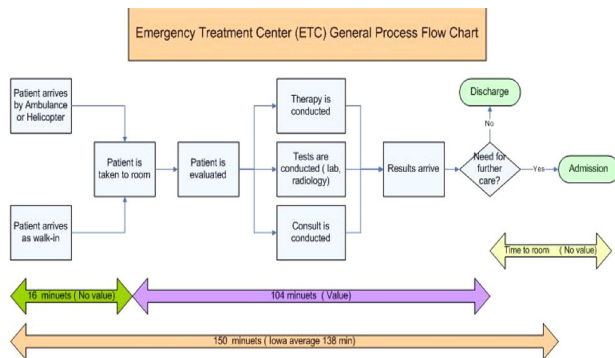


Figure 1: "Lean" in emergency dept. [19]

It's important to notice that every time the lean management methods are applied in these departments, it provides *high quality* results in efficiency and *time-saving*.

II.b. ISO IN ADMINISTRATION

ISO is a collection of standards which allow organizations to obtain a certification in Quality and/or Environment (standards of the series 9000 and 14000). There is also a series OHSAS 18000 edited by the BSI (British Standard Institute) dealing with the Health / safety in the work. A workgroup was created in 2013 to update the OHSAS 18000, and to reference it in ISO 45001. This work will allow guaranteeing a complete compatibility between these 3 future versions.

The integrated systems of management get organized around a QSE (Quality / Safety / Environment) grouped certification, which integrates the three produced standards.

The certifiers allow organizations implementing an information system to obtain a certificate on which they can communicate with their customers or partners, after a third party audit. Afterwards, organizations buy a right of leading usage with the certifiers, to be able to communicate towards the outside (institutional or particular customer) as for their organizational structure.

It's important to notice that the organization of a QMS (Quality Management System) is already presented according to a pyramidal model (figure 2) that includes all types of conform documents necessary to comply with ISO Standards requirements for certification.

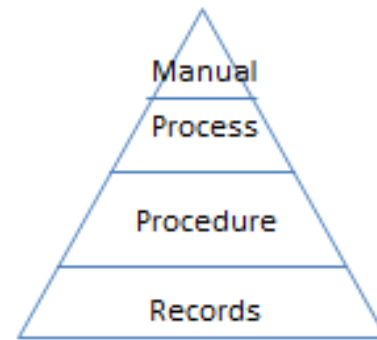


Figure 2: The Pyramidal documentary structure of QMS

Very few articles deal with the subject of ISO and Administration. The most existing ones often deal with health department [20]. We can notice that the model used by the author is obviously close to the process approach required by ISO. Sartika proposes to apply ISO 9000 model at higher education in Indonesia [21]. The proposed model matches ISO 9000 chapters with higher education concepts. The ISO 9000 standards considered in this study are former ones. In our paper, we work with the ISO 9001 V. 2008 without exclusion.

We can identify a major warning in public administration that we call the bureaucratic behavior attraction characterized by the well-known bureaucratic red tape which contributes to complete numerous forms, and provide mountains of documents. As a matter of fact, rather than removing underlying systemic issues, managers in the public sector, convinced that they improve their processes, are often attracted to add something to the overall organizational structure. This behavior leads to an increasing complexity of the system with exponential volumes of standard documents although it should be lean, easy-to-use and with minimal bureaucracy in order to guarantee the simplicity of the contents [22].

III. JOINT IMPLEMENTATION OF LEAN AND ISO IN ADMINISTRATIONS

We suggest to apply what we will call "Lean Process" [22] (figure 3) on the whole documentary pyramid. This "Lean Process" focuses on the analysis of the documented requirements by a standard (Figure 2). This approach gets organized according to 6 concepts of Lean Management we selected [16]:

1. Elimination of waste: Documentary Muda (eliminating Muda) and optimization / compilation of documents required by the standard. This method doesn't include a "cost killing" target, it only concerns the identification of the documentation structure.
2. Just the necessary of documentation: no more or no less documentation that the standard requires,

3. Continuous improvement: Deployment of Kaizen (Improvement one “small step” at a time) and of Hoshin (improvement by "breakthrough") processes via the organized organization,
4. Perfect Quality: Jidoka processes ("automation with a human touch") required by the standard, practice of the lean tools,
5. Visual Management: The goal is to promote communication and information sharing within the company between lean managers and employees (scoreboards, production control charts, team communication boards ...),
6. Task Management: Flexibility in work assignments.

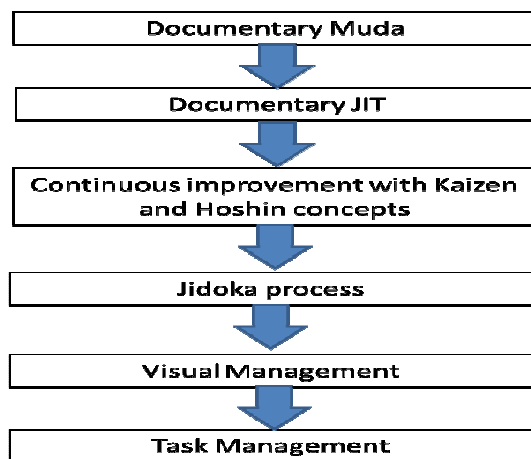


Figure 3: Lean Process

One of the main brakes to reach an ISO certification in public services is the addition of an other documentation level (with 4 stratum - figure 2) with a heavy state of documentation system (figure 4).

Administration vs ISO QMS

- LAW
- STATUTORY TEXT
- APPLICATION DECRET
- MINISTERIAL CIRCULAR
- INTERNAL RULE OR CHARTER
- RECORDS



Figure 4: Two documentary systems

To avoid the confrontation of two documentary systems, we propose to use the important point of the ISO

standard concerning the notion of “certification scope”. This item enables us to define who is directly concerned by the certification into the organization. Then, we suggest to concentrate the ISO certification on the “Administration Services Departement” as described in figure 5.

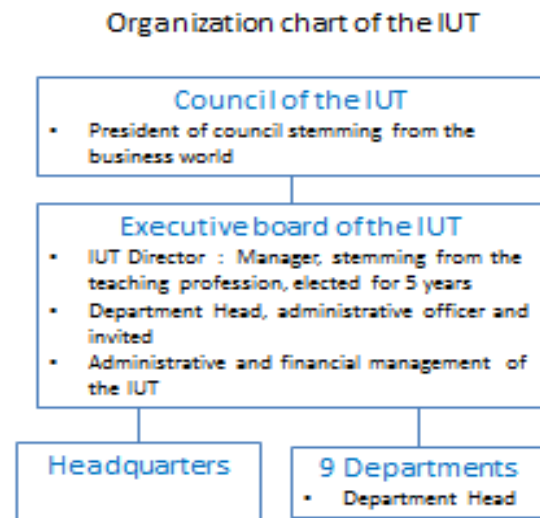


Figure 5: The organization chart of the top management (example in a French University)

We can notice that in this example, the Council of the IUT gives general orientations, and all the effective decisions are made by the Executive board.

This choice of certification scope, enables us to limit the impact of QMS on the documentary system, to reduce the number of people who are directly impacted by the ISO certification system, and to keep the QMS documentary entirely compatible with the ISO expectation. Moreover, it's possible to deploy the lean tools and the 6 concepts (figure 3) in the QMS in accordance with the administration expectation, without destroying the legal documentary system.

This approach is completely compatible with the indispensable organizational changes between the traditional bureaucracy and the emergent post-bureaucratic management system model [23], [24]:

- Consensus through “Acquiescence to Authority” To Consensus through “Institutionalized Dialogue”,
- Influence based on “Formal Position” To Influence through “Persuasion/Personal Qualities”,
- Internal “Trust Immaterial” To High Need for “Internal Trust”,
- Emphasis on “Rules and Regulations” To Emphasis on “Organizational Mission”,
- “Information Monopolized at Top of Hierarchy” To “Strategic Information shared in Organization”,

- Focus on “Rules for Conduct” To Focus on “Principles Guiding Action”,
- Fixed (and Clear) “Decision Making Processes” To “Fluid/Flexible Decision Making Processes”,
- “Communal Spirit/Friendship Groupings” To “Network of Specialized Functional Relationships”,
- “Hierarchical Appraisal” To “Open and Visible Peer Review Processes”,
- “Definite and Impermeable Boundaries” To “Open and Permeable Boundaries”,
- “Objective Rules to ensure Equity of Treatment” To “Broad Public Standards of Performance”,
- “Expectation of Constancy” To “Expectation of Change”.

We don't identify any brakes with these methods (Incompatibility with the administrative documentation or incredulity of the management), because this is the executive board which supports the QMS and deploys it in the organization.

IV. AN APPLICATION IN THE UNIVERSITY OF CERGY PONTOISE

In 2009, the top Management of the Cergy Pontoise University (France) decided to obtain an ISO Certification. It was a very important aim because a significant part of its external suppliers and partners (for instance: so called CFA (which helps the apprentices to find a firm)) were certified, and the Management wanted to develop the Quality as a brand image for its new customers in training.

Then, we developed and applied on the administration system, a lean process [22], and in one year of an exhaustive investigation we obtained the results synthesized in figures 6 and 7. According to this method and choice of scope, the deployed QMS is condensed and simplified from all unnecessary documents. The quality manual fits on only one page as shown in figure 6.

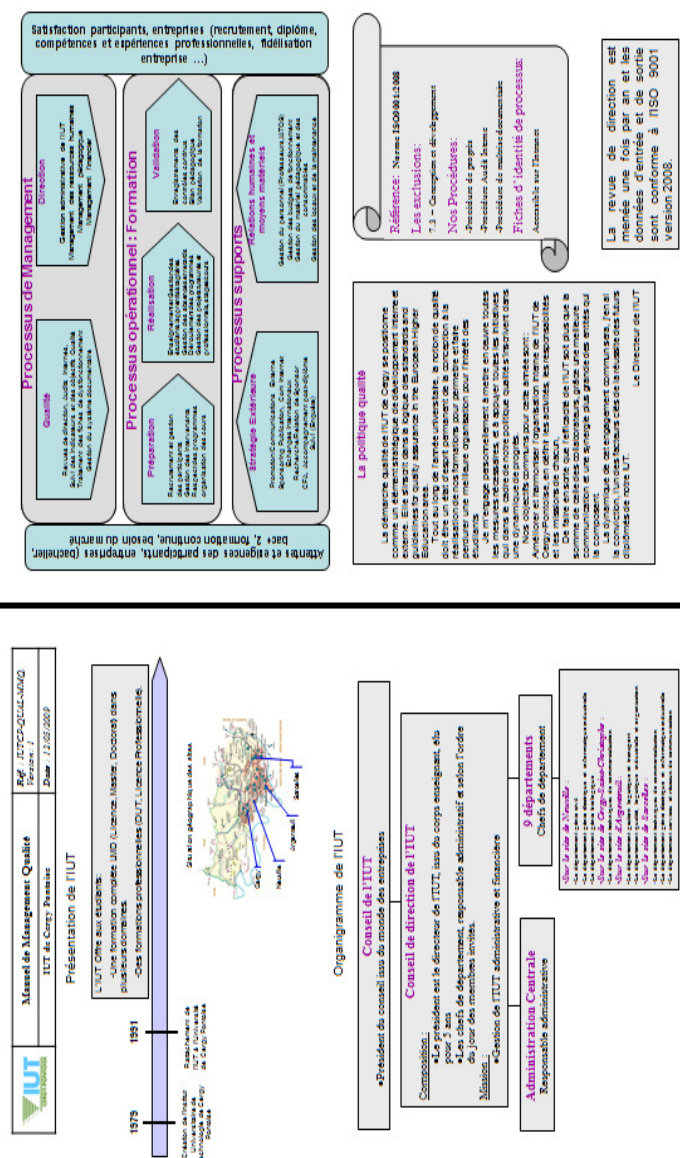


Figure 6: Quality manual in one page into an administration service (example in a French University)

Only three procedures were developed (instead of six fixed procedures noticed in the standard):

- Documentary and record management,
- Management of the audit,
- Management of the progress.

The possibility to compile some synergic themes in the same procedure was used. For example, we have merged the records and the documentation, the improvement with the non-conformity management and finally the corrective and the preventive actions.

To get ISO 9001 certification, only five records were necessary:

- Management review,
- Supplier evaluation,
- Audit record,
- Non-conformity record,
- Improvement record.

The 19 records identified in ISO 9001 were already done by the administration system instead of the five described below (figure 7).

Quality manual (1 page)				
ISO Process				
Required Procedures	Documentary and record management	Management of the audit	Management of the Progress	↓ ↓ ↓
Required records		Audit record	Non-conformity and improvement record	Management review, supplier evaluation

Figure 7: QMS after applying lean process

The ISO label was achieved in 2010 without any deviation, and from now on the ISO label can be used in all the outside university documentation.

V.CONCLUSIONS AND PERSPECTIVES

This method is completely compatible with the supposed ideal administration typology in accordance with the bureaucratic management system [23], [24] that needs to be certificated.

The behavior of the organization is a function of legal and social pressures. In public administration particularly, institutional pressures generate organizational structures away from the seeking of organizational rationality and efficiency [25], [26] adapted to contextual environment. The public top executives are obsessed by the capitals and

resources (how, how much, when) and always apply traditional methods like bureaucratic management methods which neglect the finalities (who, what, why, for who). This ISO/lean method enables to produce more Fluid and Flexible Decision-Making Processes by reducing the amount of intermediary documentation in order to focus on significant strategic aims.

We assume that, this method is already compatible with the next version of the ISO standard (planned in September 2015), because the end of the QMS pyramid system is one new focus of this review. This new point of view is completely consistent with our method.

The expected gains due to the improvements of this approach are difficult to estimate given that we have not yet enough feedback. However, there is no doubt that those principles simplify the QMS and reduce the documentation inherent to the ISO requirements. Furthermore, this lean QMS allows the Quality Manager spending more time for the implementation of improvement tools. Another undeniable gain is the paper gain: instead of a QMS of X pages, only one page is proposed. It allows the consultation of the QMS easier and more often.

The next step for this approach is to study the lean process (figure 3), in the whole administrative documentation system to deal with the 6 administrative strata documentation (figure 4). This is the next goal of our research and the opportunity to create a negentropic documentation system in every field of the administration system.

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